

**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**KNUST SCHOOL OF BUSINESS**

**MOBILE MONEY PENETRATION, FINANCIAL INCLUSION, HOUSEHOLD  
WELFARE AND POVERTY REDUCTION IN GHANA**

**BY**

**LINDA MENSAH FRIMPONG**

**(PG 3978120)**

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MASTER OF BUSINESS ADMINISTRATION IN ACCOUNTING**

**NOVEMBER, 2023**

## DECLARATION

I hereby declare that this submission is my work toward the award of the Master of Business Administration in Accounting and that to the best of my knowledge, it contains no material previously published by another person, nor material which has been accepted for the award of any other degree of the University, except where due acknowledgement has been made in the text.

LINDA MENSAH FRIMPONG

(STUDENT)

(PG3978120)

Signature

Date

**CERTIFIED BY:**

DR. NICHOLAS ADDAI BOAMAH

(SUPERVISOR)

Signature

Date

**CERTIFIED BY:**

PROF. K.O APPIAH

(HEAD OF DEPARTMENT)

Signature

Date

## DEDICATION

I dedicate my thesis to the Almighty God for giving me the strength, good health and wisdom to conduct this research. I also dedicate this thesis to my supportive husband who helped me and encouraged me to conduct this research. His kind words and financial support motivated me to strive for the best.



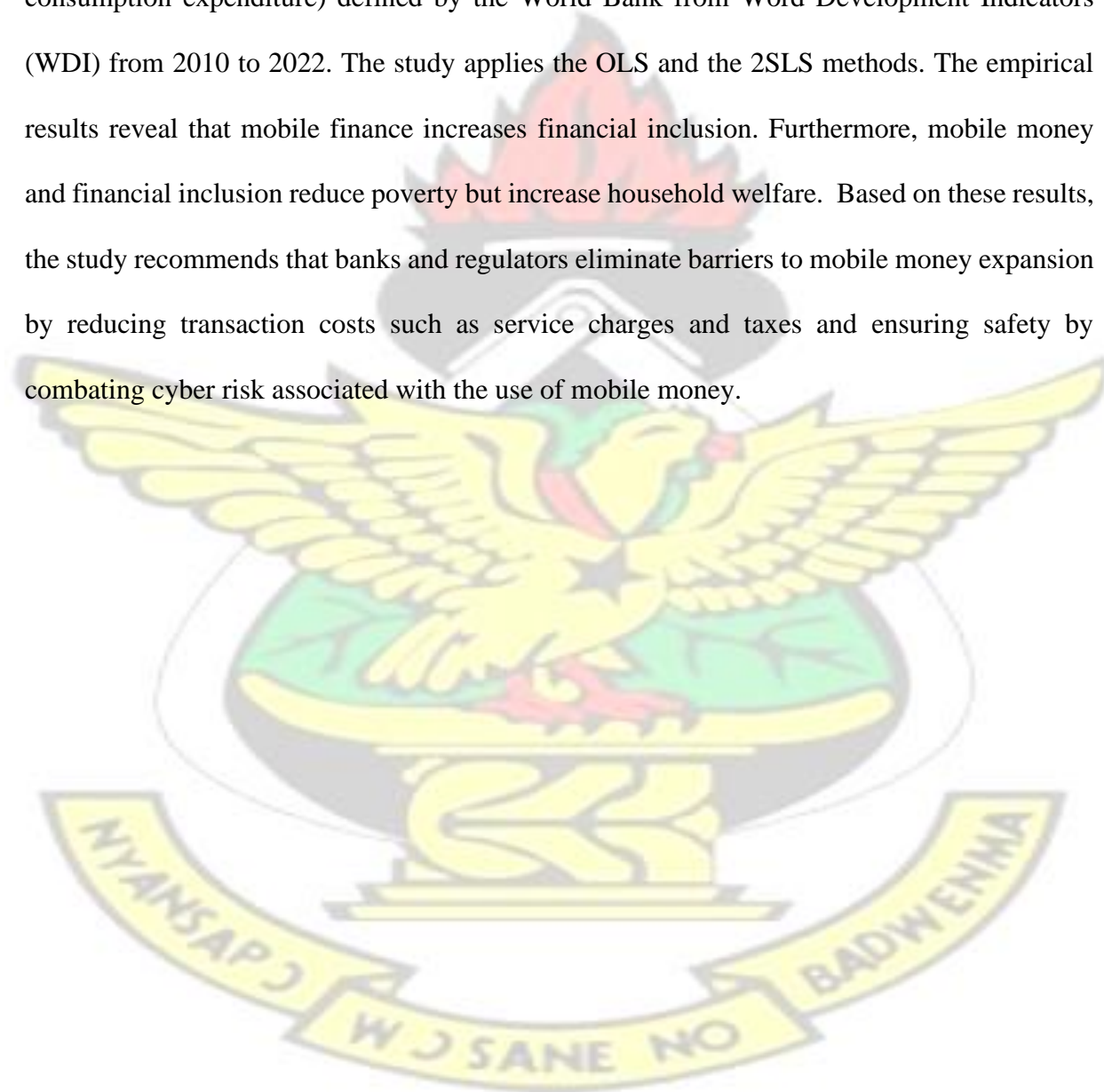
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## ABSTRACT

Despite research progress on the effect of financial inclusion and mobile money penetration on other socioeconomic variables, the impact of mobile money and financial inclusion on poverty reductions and household welfare is still underdeveloped in the literature. Accordingly, this study investigates the impact of mobile money and financial inclusion on two poverty indicators, i.e., life expectancy and poverty headcount, and household welfare (household final consumption expenditure) defined by the World Bank from World Development Indicators (WDI) from 2010 to 2022. The study applies the OLS and the 2SLS methods. The empirical results reveal that mobile finance increases financial inclusion. Furthermore, mobile money and financial inclusion reduce poverty but increase household welfare. Based on these results, the study recommends that banks and regulators eliminate barriers to mobile money expansion by reducing transaction costs such as service charges and taxes and ensuring safety by combating cyber risk associated with the use of mobile money.





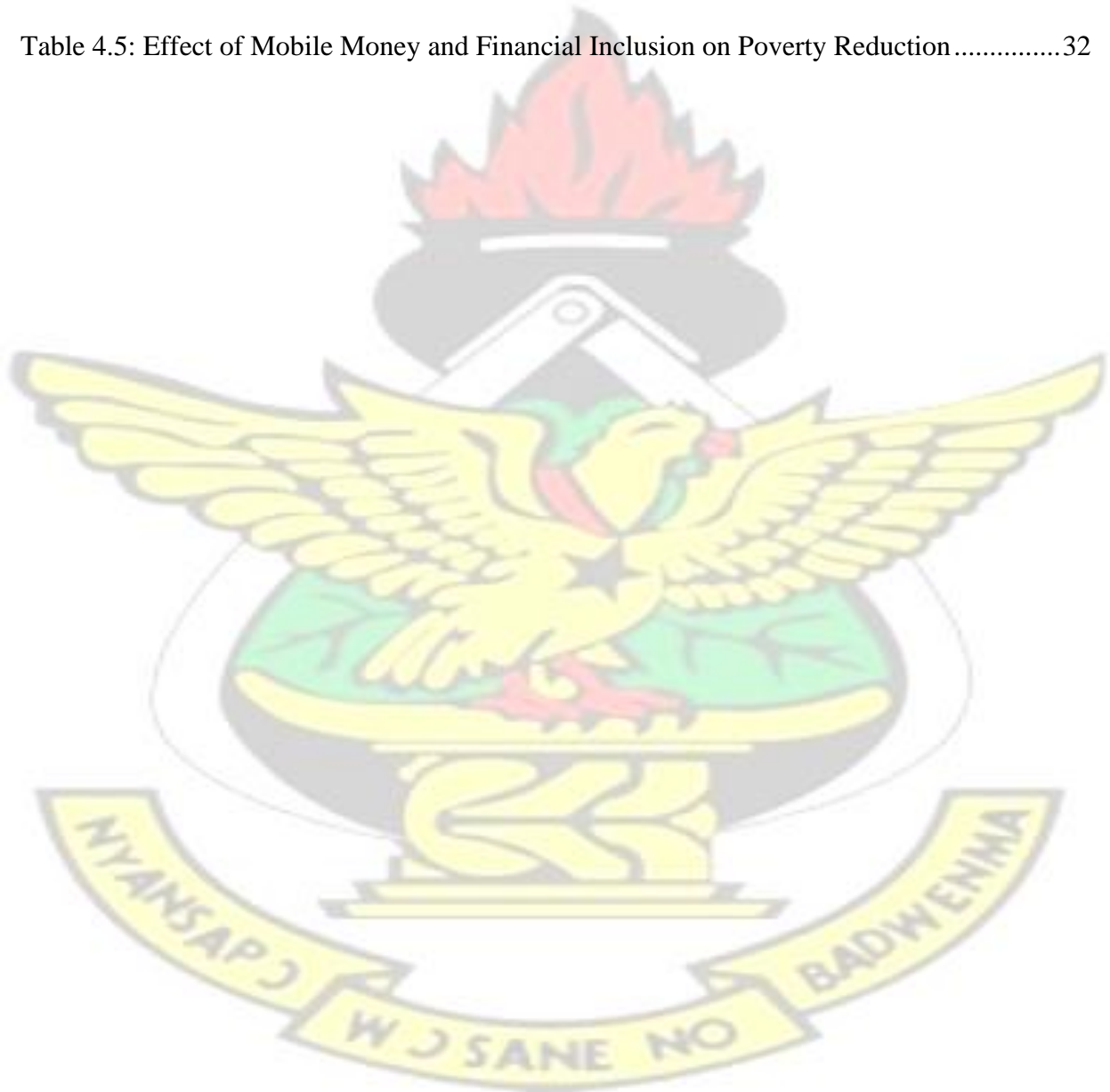
## TABLE OF CONTENT

<b>DECLARATION.....</b>	<b>i</b>
<b>DEDICATION.....</b>	<b>i</b>
<b>ACKNOWLEDGEMENT.....</b>	<b>ii</b>
<b>ABSTRACT.....</b>	<b>iii</b>
<b>TABLE OF CONTENT.....</b>	<b>iv</b>
<b>LIST OF TABLES.....</b>	<b>vi</b>
<b>LIST OF FIGURES.....</b>	<b>vii</b>
<b>LIST OF ABBREVIATIONS.....</b>	<b>viii</b>
<b>INTRODUCTION: CHAPTER ONE.....</b>	<b>1</b>
1.1 Background of the Study.....	1
1.2 Statement of the Problem.....	3
1.3 Research Objectives.....	4
1.4 Research Questions.....	4
1.5 Significance of Study.....	5
1.6 Summary Methodology.....	5
1.7 Scope of the Study.....	5
1.8 Organisation of Study.....	6
<b>CHAPTER TWO: LITERATURE REVIEW.....</b>	<b>7</b>
2.0 Introduction.....	7
2.1 Conceptual Review.....	7
2.1.1 Mobile Money.....	7
2.1.2 Financial Inclusion.....	9
2.1.3 Poverty Reduction.....	9
2.2 Theoretical Review.....	10
2.2.1 The Technology Acceptance Model.....	10
2.3 Empirical Review.....	11
2.3.1 Mobile Money and Poverty Reduction.....	11
2.3.2 Financial Inclusion and Poverty Reduction.....	14
2.4 Mobile Money and Financial Inclusion in Ghana.....	17
2.5 Conceptual Framework.....	18
<b>CHAPTER THREE METHODOLOGY.....</b>	<b>19</b>
3.0 Introduction.....	19
3.1 Research Design.....	19
3.2 Data and Data Source.....	19

3.3	Model Specification .....	20
3.4	Measurement of Variables .....	21
3.4.1	Poverty Reduction .....	21
3.4.1.1	Life Expectancy.....	21
3.4.1.2	Poverty Headcount .....	21
3.4.2	Household Welfare.....	21
3.4.3	Financial Inclusion .....	22
3.4.4	Mobile Money .....	22
3.4.5	Mobile Phone Subscription .....	22
3.4.6	Infrastructure .....	22
3.4.7	Education.....	23
3.4.8	GDP Growth.....	23
<b>CHAPTER FOUR: RESULTS AND DISCUSSION .....</b>		<b>25</b>
4.0	Introduction.....	25
4.1	Stationarity .....	25
4.2	Summary Statistics.....	26
4.3	Correlation .....	27
4.4	Empirical Results .....	29
4.4.1	Mobile Money and Financial Inclusion .....	29
4.4.2	Mobile Money, Financial Inclusion and Poverty Reduction .....	30
4.5	Discussion of Results .....	33
4.5.1	Effect of Mobile Money on Financial Inclusion.....	33
4.5.2	Effect of Mobile Money and Financial Inclusion on Poverty and Household Welfare.....	34
<b>CHAPTER FIVE: SUMMARY, CONCLUSION AND RCOMMNDATIONS .....</b>		<b>36</b>
5.1	Introduction.....	36
5.2	Summary of Finding .....	36
5.2.1	Effect of Mobile Money on Financial Inclusion.....	36
5.2.2	Effect of Mobile Money, Financial Inclusion on Household Welfare and Poverty .....	36
5.3	Conclusion .....	37
5.4	Recommendations.....	37
5.5	Recommendations for Future Research .....	38
References.....		39

## LIST OF TABLES

Table 3.1: Variable Measurement and Description .....	24
Table 4.1: Augmented Dickey-Fuller Unit Root Test Results.....	25
Table 4.2: Descriptive Analysis.....	26
Table 4.3: Correlation .....	28
Table 4.4: Effect of Mobile Money on Financial Inclusion.....	29
Table 4.5: Effect of Mobile Money and Financial Inclusion on Poverty Reduction.....	32





## LIST OF FIGURES

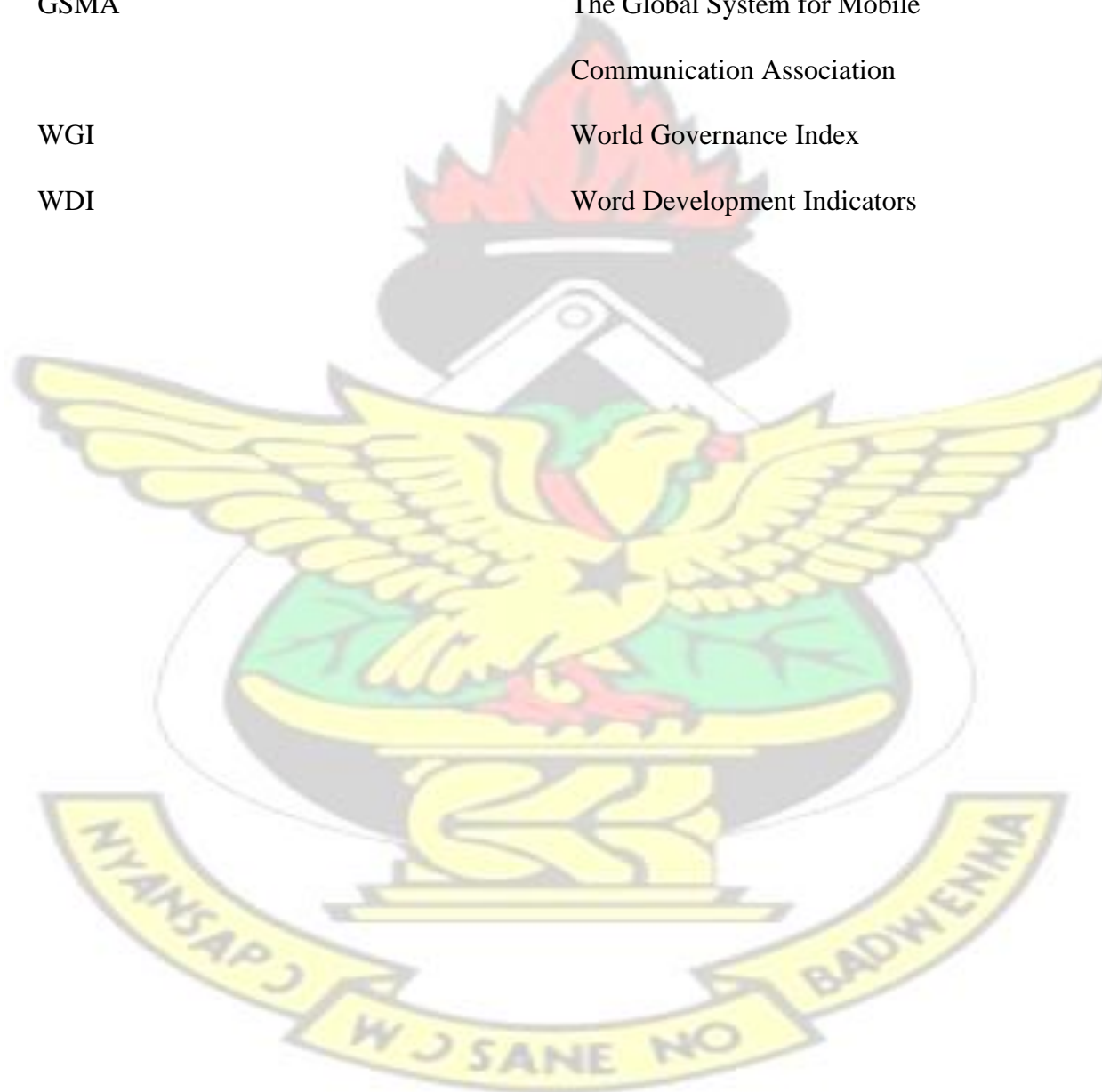
2.1: effect of mobile money and financial inclusion on poverty reduction .....	18
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## LIST OF ABBREVIATIONS

FRI	Financial Inclusion Index
GPS	Ghana Payment System
PCA	Principal Component Analysis
GSMA	The Global System for Mobile Communication Association
WGI	World Governance Index
WDI	World Development Indicators



# INTRODUCTION

## CHAPTER ONE

### 1.1 Background of the Study

Financial inclusion continues to be promoted, particularly for the poor. Access to financial services has been linked to economic growth. According to Demirgüç-Kunt and Klapper (2018), financial inclusion plays a crucial role in alleviating poverty by allowing the poor to save, invest and accumulate wealth as empowerment and insurance against vulnerabilities. However, the unbanked population is still in ascendancy globally, making financial inclusion an important social agenda in several developing countries. (Dupas et al. 2018). Global financial exclusion stood at 1.7 billion in 2022 and represents about 40 per cent of the adult global population (Grohmann, Klühs, and Menkhoff, 2018). Tradition financial institutions have insufficiently enhanced financial access, particularly in Sub-Saharan African countries. (Grohmann, Klühs, and Menkhoff, 2021).

Financial inclusion refers to easy access to financial products and services by individuals and businesses (World Bank, 2018), and has poverty alleviation potentials (Demirgüç-Kunt *et al.*, 2018). Financial inclusion is a panacea to poverty alleviation to some extent, while individuals are required to embrace the use of financial products and services to accumulate capital to achieve financial well-being. Thus, financial awareness is a precondition to financial inclusion. Participation in the financial process helps the individual to save for education, a business to manage risk and use liquidity to absorb inherent risk or financial demands, all of which can improve the overall well-being of the individual (Tha and Sandeep, 2022).

The introduction of mobile money is targeted to increase financial inclusion, particularly in developing countries such as SSA countries. Mobile money services allow the storage of money digitally and facilitate the transfer of it from one mobile money user to another user (Myeni *et al.* 2020). Mobile Money continues to penetrate several countries in Africa including Ghana. As of January 2022, 38.9 per cent of the population aged 15 years and older had mobile money accounts in Ghana (Sasu, 2022). The use of mobile money has several generally accepted benefits some of which include poverty alleviation, financial inclusion and access, an avenue for investment and capital accumulation, enhancement of the payment systems and a decrease in communication costs (Tha *et al.* 2022; Abdul-Rahaman, and Abdulai, 2021; Bahati and Aziakpono, 2022).

The progress in telecommunication technology and financial regulation has facilitated the recent mobile money interoperability which collaborates mobile money service delivery with other mobile telecommunication networks and financial institutions (Sasu, 2022). However, mobile money penetration still differs substantially among countries in Africa. For instance, in Ghana, only 38.9 per cent of the young and adult population has registered for mobile money services as of January 2022 (Sasu, 2022). Based on the ongoing empirical studies on the prospects of mobile money, this study analyses the implications of mobile money and financial inclusion on poverty alleviation and welfare in Ghana. Studies show that financial inclusion is associated with financial inclusion and individual welfare. Financial inclusion is associated with poverty reduction through income smoothening and financial management (Demirguc-Kunt et al. 2017). Mobile money allows individuals and businesses to save and build wealth, insure against unforeseen financial circumstances and facilitate financial transactions and trade. (Bruhn and Love, 2014; (Brune, Gine, Goldberg, and Yang, 2016).



Literature on mobile money as a tool for financial alleviation is expanding particularly in poor countries. According to The Global System for Mobile Communications Association (GSMA) (2017) achieved 11 out of the 17 Sustainable development goals. (2017) empowering households, decreasing inequality and alleviating poverty. These findings are supported by Danquah and Iddrisu (2018) who observe that mobile money improves the income of poor households in Ghana through saving and contributes to raising higher revenue for smallholder farmers. Thus, this study expands the literature and brings new evidence on the implication of mobile money on poverty alleviation and welfare as well as financial inclusion in Ghana.

## **1.2 Statement of the Problem**

Studies show that traditional financial institutions enhance poverty alleviation and financial inclusion through savings, wealth accumulation, insurance, and employment (Sapienza, 2018; Bruhn and Love, 2022; Cai, Chen, Fang, and Zhou, 2019; Dupas and Robinson, 2019; Kabuki and Townsend, 2020; Bruhn and Love, 2022; Kaboski and Townsend, 2020). On the other hand, other studies show no clear evidence between traditional financial institutions, poverty alleviation and financial inclusion (Dupas et al., 2016; Banerjee et al. 2022; Tarozzi et al., 2019; Ausburg et al., 2015). They argue that the relationship between financial services has always been positive but not transformative. They generally suggest that traditional financial institutions can grant a loan to businesses and individuals, but the evidence is less clear that these loans transform into individual and business development terms of income increase and individual welfare due to high interest on loans and loan conditions (Banerjee et al. 2022). As a result, attention has been shifted to mobile money as a tool to increase financial inclusion and poverty reduction, with most studies showing positive results (Suri and Jack, 2016; GSMA, 2017; N'dri, and Kakinaka, 2020; Riley. 2018; Danquah and Iddrisu, 2018).



Mobile money allows individuals to access financial services and, in a way, expands financial inclusion making poverty reduction more substantial (N'dri, and Kakinaka (2020). This study provides new evidence on the explored variables in Ghana and contributes to this area in three ways. Firstly, this study deviates from other studies which use monetary poverty indicators such as income and savings which only look at one-dimensional poverty measurement (Batana et al., 2020) and uses basic welfare indicators such as life expectancy and GDP per capita. Secondly, this study assesses a joint implication of mobile money and financial inclusion on poverty reductions and welfare, unlike other studies that assessed them separately (Munyegera and Matsumoto, 2016; Riley, 2018; Danquah & Iddrisu, 2018). Third, this study provides new evidence and enhances prior studies in low-income countries and uses Ghana as a case study.

### **1.3 Research Objectives**

The general objective of the study is to examine the effect of financial inclusion, mobile money penetration, and individual welfare in Ghana. Specifically, the study seeks to;

1. Examine the effects of mobile money penetration on household welfare.
2. Analyze the role of the combination of financial inclusion and mobile money in determining poverty reduction at the individual level in Ghana.

### **1.4 Research Questions**

Accordingly, the study seeks to provide answers to the following questions.

1. What effect does mobile money penetration have on household welfare in Ghana?
2. How do financial inclusion and mobile money combine to determine poverty reduction at the individual level in Ghana?

### **1.5 Significance of the Study**

The study has implications for governments, policymakers, financial institutions, mobile telecommunication network providers, households and literature. First, the study has implications for sound policies that provide infrastructure for mobile money expansion in rural communities. Second, the study creates awareness of the crucial role of mobile money in poverty alleviation which recommends that governments partner with the network providers to provide a more robust mobile money service. Third, traditional banks and microfinance institutions can take inspiration from mobile money and design financial products and services which can be delivered through mobile money

### **1.6 Summary Methodology**

This study uses secondary data in Ghana sourced from the Bank of Ghana Payment Systems (GPS) and World Development Indicators (WDI). Poverty reductions and welfare variables are sourced from the WDI, while the mobile money variable is obtained from the WDI from 2010 to 2022. The study applies the Ordinary least square and the two-stage least square estimators.

### **1.7 Scope of the Study**

The study was conducted in Ghana. The study uses three variables which are financial inclusion, poverty and mobile money penetration. The poverty measure focuses on the extent to which an individual cannot access healthcare, meals and education due to the lack of money, while volumes of mobile money transactions are used to represent mobile money usage.

## **1.8 Organisation of the Study**

The rest of the study is organized as follows; Chapter Two reviews studies on the topic. Chapter Three discusses data and methodology. Chapter Four presents results and discussion, and Chapter Five summarises the findings, concludes and provides some recommendations.



## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 Introduction**

The chapter reviews related literature. The chapter has five (5) sections. Section 2.1 reviews the study's concepts. Section 2.2 highlights mobile money and financial inclusion in Ghana. Section 2.3 reviews the theory underpinning the constructs relationship. 2.5 reviews empirical studies. Section 2.5 presents the conceptual framework.

#### **2.1 Conceptual Review**

##### **2.1.1 Mobile Money**

Mothobi and Grzybowski (2017) define mobile money as money on mobile phone devices. Similarly, Kaboski and Townsend (2020) define mobile money as electronic money used over a mobile phone without necessarily linking it to a bank account. This definition creates a distinction between mobile money and mobile banking. Mobile money could be used for both domestic and international remittances, payroll deposits, bill payments, loan receipts, payments for groceries, airtime top-ups, purchase of tickets and government bonds (Kaboski and Townsend, 2020). In Ghana, mobile money is defined as electronic money with its equivalent in Bank of Ghana (BOG) notes and coins stored on a SIM card in a mobile phone as an identifier (BOG, 2017). Diniz et al. (2020) define mobile money as electronic money which is mobile and portable and equivalent to mobile cash. Mobile money can be differentiated from other means of electronic payments such as (debit cards, credit cards, smart cards, point of sales and automated teller machines), because of its several attributes of traditional money such as liquidity, acceptability and anonymity. Mobile money allows the transfer of electronic money via mobile phone devices to a user of mobile money services (King and Nielsen, 2019). Through mobile money, several unbanked individuals could have access to essential financial



products and services such as; (i) person-to-person domestic and international funds transfer, (ii) person-to-business, purchase, sales and payment of goods and services, (iii) payment of utility bills, (iv) purchase of micro insurance products, (v) bank deposit via mobile money and withdrawals (N'dri and Kakinaka; 2020; Kaboski and Townsend, 2020; Riley, 2018). Maëlle (2018) defines mobile money as a mobile-based financial service which provides access to low-cost financial products and services to financially excluded individuals. Mobile money solves the problem of access to formal banking services and the lack of infrastructure in some parts of a country.

Mobile money is also a mobile wallet which represents a digital repository of money held on a money mobile phone. It is similar to the normal money wallet and can store money for payment and replace same on receipts. From all these definitions, mobile money can be categorised into two; (i) the over counter transaction where the customer visits the mobile money agents in a kiosk or its equivalent, and the agent executes the customer's transaction either depositing, sending or withdrawing, and (ii) when the customer performs his mobile money transaction, by sending electronic cash to another mobile money user, or for payments for goods and services. Studies show that the use of mobile money enhances household welfare, and alleviates poverty by bringing essential financial products and services to the poor (GSMA (2017a; Munyegera and Matsumoto, 2016; Riley, 2018; Danquah and Iddrisu, 2018)



### **2.1.2 Financial Inclusion**

Several definitions of financial inclusion exist in the literature. All have analogues information content in terms of conclusion. The World Bank (2014) defines financial inclusion as a share of households or firms who use financial services. Amidžić et al. (2020) define financial inclusion as an economic state where everybody can access primary financial services based on motivations other than efficiency criteria. Demirgüç-Kunt et al. (2018) conceptualize financial inclusion as the use of financial services by several groups of people in a way that maximizes welfare. Sahay et al. (2015) define financial inclusion as the access and use of financial services at affordable cost and benefits the poor groups in society. Sarma (2021) comprehensively defines financial inclusion based on accessibility, availability, and the use of the formal financial system by all members of the population.

### **2.1.3 Poverty Reduction**

Poverty, which could be defined as the state in which people or individuals lack financial resources to meet their minimum standard of living, continues to be a major challenge in African countries (Ofori-Abebrese et al., 2020; Tita and Aziakpono, 2017). The World Bank defines poverty as surviving on less than US\$1.9 a day. Also, individuals engulfed in poverty are often characterized by low income and consumption levels, and also, often live without clean water, proper housing, healthy food, proper medical attention, and better education among others (Koomson et al., 2020; Tita & Aziakpono, 2017). Poverty is a state of being extremely poor (Domanban et al., 2022). United Nations also defines poverty as a state of denial of choice and opportunity, a violation of human dignity (Abdul-Mumin, 2022; Kelikume, 2021). They also define it as a lack of basic capacity to participate effectively in society. It also means not having enough to feed on. Poverty has diverse economic, social and political causes and effects. Poverty in statistics and economics measures absolute poverty

(comparing income against the expected income to meet basic personal needs, and relative poverty (inability to meet a certain minimum standard of living) (Abokyi et al., 2018). On the other hand, poverty reduction is the permanent reduction in the global poverty headcount. A portfolio of strategies is used as poverty reduction strategies to; (i) promote long-term and permanent positive change on the poor, (ii) tackle the cause of poverty, (iii) transfer income and resources from rich areas of society to the poor, (iv) provide assistance to the extremely poor (Bird, 2019).

## **2.2 Theoretical Review**

### **2.2.1 The Technology Acceptance Model**

The theory is credited to the seminal work of Davis (1989), which suggests that two main factors influence a person's intention to use new technology: perceived ease of use and perceived usefulness (Charness and Boot, 2016). This suggests that people are more likely to accept and use technology when they deem it to be easy to use and useful in their daily activities. These attributes are the grounds on which mobile money technology has been advertised, thus contributing to its fast penetration rate in the informal sector in developing countries like Ghana. Following this theoretical position, it is expected that mobile-based technology in modern times will be accepted and adopted easily by younger residents, because they can easily grasp the usefulness of new technology. Many other recent studies have used the technology acceptance model to examine human interaction with technology. However, not many studies focus on technologies like mobile money in Ghana. At best, studies such as Okocha and Adibi (2020) and Asnakew (2020) focus on mobile banking technologies for business executives and consumers of formal banking products. This leaves a gap in the academic literature on financial inclusion and the role of financial innovations like informal mobile technologies, to which further empirical work like this is contributed.

## **2.3 Empirical Review**

### **2.3.1 Mobile Money and Poverty Reduction**

Many empirical studies generally portray mobile money as beneficial for the social and economic development of African people, particularly those with low and medium incomes. Studies such as Mpofo (2022) study the effect of mobile money on poverty reduction by reviewing studies on the topic. The results reveal that mobile money does not affect poverty reductions. Mazumder et al. (2022) investigate the impact of mobile financial services on underprivileged workers in Bangladesh. They use primary data sourced from 386 respondents. Their OLS, Chi-square results indicate that mobile financial services have improved the welfare of underprivileged people. Potnis and Gala (2022) assess the impact of mobile financial services on poverty reductions in India. Their study used survey data from 400 respondents and applied the OLS regression estimator. Their findings show that mobile financial services are important to poverty reduction. Abiona and Koppensteiner (2022) investigated the effect of mobile money adoption, income smoothening and poverty reductions in Tanzania from 2010 to 2012. The results show that mobile money adoption reduces poverty.

Riley (2018) examines how mobile money helps to reduce the impact of rainfall shocks such as flooding or drought on households that have access to mobile money services in villages or rural communities. Their study focuses on examining the impact of mobile money services on both mobile money users and households not using mobile money services, following a rainfall shock. This method allowed the researcher to assess the degree to which remittances obtained through mobile money were spread within the villages, thereby reducing the risk to community households. Their research finds that only mobile money users could prevent a decrease in their consumption after a rainfall shock, with no spillover impact on other village members.

There is also evidence that mobile money has had a huge effect on poverty reduction and the development of women's health in rural communities. According to Suri and Jack (2016), access to mobile money services in Kenya has increased consumption levels per capita and lifted more than 100,000 households out of poverty. Their study argues that the mobile money effects are seen more strongly in female-headed households, which display signs of a shift in financial behaviour in terms of financial resilience rates, savings and buying decisions. Their study concludes that mobile money has had a long-term impact on household consumption in Kenya and has affected labour allocation and poverty rates in the country.

Similarly, Adaba et al. (2018) study the effect of mobile money on the health and wellbeing of residents in Ghana's Upper East region. Their study uses a qualitative study approach and gathers data through organized interviews with mobile money operators as well as consumers in three towns in the Upper East—Bolgatanga, Zebilla and Tongo. Their study finds that most people enjoyed the benefits of using mobile money, although some people suffered problems with the service (poor network coverage and inadequate energy infrastructure). These benefits include the incentive to participate in the financial system, improved capacity to manage family and personal commitments and motivate respondents to make purchasing decisions for themselves and their companies. In addition, Dong et al., (2018) examine the effects of mobile money services on the value chain, made up of mobile network providers, banks and end users. They use both primary and secondary data to determine the effect of mobile money and the potential impacts of credit transactions on the value chain. Their study shows that the mobile money business has a positive impact on the productivity of the value chain, and these effects are constant over time.



Amid these, mobile money's optimistic effects are not robust (Aron, 2018). For example, Cobla and Osei-Assibey (2017) argue that while mobile money supported students' financial purchasing decisions, it risked increasing student spending behaviour and lowering the savings trend among these groups of individuals. Again, Akomea-Frimpong et al. (2019) claim that Ghana's mobile money is being used to facilitate fraud due to inadequate internal controls and processes, the lack of advanced detection software and the lack of comprehensive education on service use. Their study suggests that service providers could combat the mobile money service's fraud-related issues by establishing a fraud strategy that merchants and partner banks should follow, while merchants receive training in public relations that can promote mass public education.

Amoah et al., (2020) examine the motivating factors that propel people to use mobile money in the Greater Accra Region (GAR) of Ghana. The study uses a survey approach to obtain primary data on 733 households from the GAR of Ghana. And applies a logit model and its marginal effects for the estimation. The study finds that the use of mobile money to access social and economic services can go a long way in promoting financial inclusion, financial empowerment and the general well-being of people. Maëlle (2018) study the pattern of mobile money adoption in emerging countries in 2011 and 2014 based on cluster analysis. The results show that mobile money penetration is higher in areas where access to financial access is lower. They conclude that mobile money improves individual welfare.



### **2.3.2 Financial Inclusion and Poverty Reduction**

Dogan, et al. (2022) investigate the impact of financial inclusion on poverty reduction in Turkey. They measure poverty with three multidimensional measures (lowest-income poverty line, a lower middle-income line and an upper middle-income line, and financial inclusion as access to the nearest bank. The logistic results indicate that an increase in financial inclusion decreases poverty. Tay et al. (2022) study the effect of financial inclusion on poverty reduction in Asia countries from 2016 to 2019. They find that financial inclusion reduces poverty. Nsiah et al., (2022) investigate the threshold effect of financial inclusion on poverty reduction in sub-Saharan Africa (SSA). Using an annual dataset spanning 2010 to 2017, Hansen's estimation and Differenced generalized method of moments (GMM) methods were used to estimate the threshold level of financial inclusion that will reduce poverty and factors that influence financial inclusion respectively. The results show that beyond a threshold level of 0.365, financial inclusion would lead to poverty reduction with money supply being positively significant towards poverty reduction in SSA.

Immurana et al. (2022) studied the effect of financial inclusion of basic drinking water and sanitation in Africa from 2004 to 2008. They apply the fixed effect, random effect and instrumental variable fixed effect as estimators. No matter the estimator, the results show that financial inclusion improves basic drinking water and sanitation hence reducing poverty. Demir et al. (2022) investigated the effect of financial technology (FinTech) and financial inclusion on income inequality in 140 countries. They used survey data in 2011, 2014 and 2017. Their quantile regression results indicate that financial technology and financial inclusion reduce income inequality, hence reducing poverty.

N'dri and Kakinaka (2020) assess the effects of financial inclusion and mobile money use on an individual's nonmonetary welfare in Burkina Faso by applying matching methods. Their results confirm the significant role of financial inclusion in alleviating poverty. Their study further shows that once individuals access financial services through mobile money, such favourable effects on poverty alleviation become more substantial. Nanziri (2016) studied the effect of financial inclusion and individual welfare using a pooled dataset on financial access in South Africa. Their study finds that financially excluded men are not significantly different from financially excluded men, however, financially excluded women are significantly different from financially excluded women in terms of welfare gains. Jabir et al., (2017) shed light on the potential impact that financial inclusion has on poverty reduction among low-income individuals using 35 Sub-Saharan African countries. They employ the treatment effect model and propensity score matching techniques. Their results suggest that the poor who are financially included derives net wealth benefit and larger welfare benefit than those who are not financially included

Koomson et al. (2020) examine the relationship between financial inclusion and how vulnerable Ghanaian households are to poverty. The data for the study were obtained from the Ghana Living Standards Survey of 2016/17. The multiple correspondence method was used to produce a financial inclusion index, using a three-stage feasible least squares to estimate households' vulnerability to poverty, through the probit technique. The results reveal that an improvement in financial inclusion has the tendency to reduce the likelihood of households being poor by 27% and can therefore avert how households are exposed to future poverty by 28%. Their study also indicates that financial inclusion tends to reduce poverty and can reduce vulnerability to becoming poor in rural areas than urban areas in Ghana.

Omar and Inaba (2020) examine the determinants of financial inclusion and further estimate the impact of financial inclusion on poverty reduction and income inequality. Using the fixed effect estimation method, the study revealed that per capita income, age dependency ratio, ratio of internet users, inflation as well and income inequality significantly affect the level of financial inclusion in emerging markets. Their study further reveals that financial inclusion reduces poverty rates and income inequality significantly in developing economies. Umaru and Chibuzo (2018) investigate the relationship that exists between financial inclusion and poverty reduction considering the moderating effects of microfinance in Nigeria. Using a simple random sampling technique, a self-administered questionnaire was used to elicit data from 384 customers of microfinance banks from the three senatorial districts in Kebbi State Nigeria. The results from the Partial Least Square (PLS)-Structural Equation Modeling (SEM) show a significant positive effect of financial inclusion on poverty reduction.

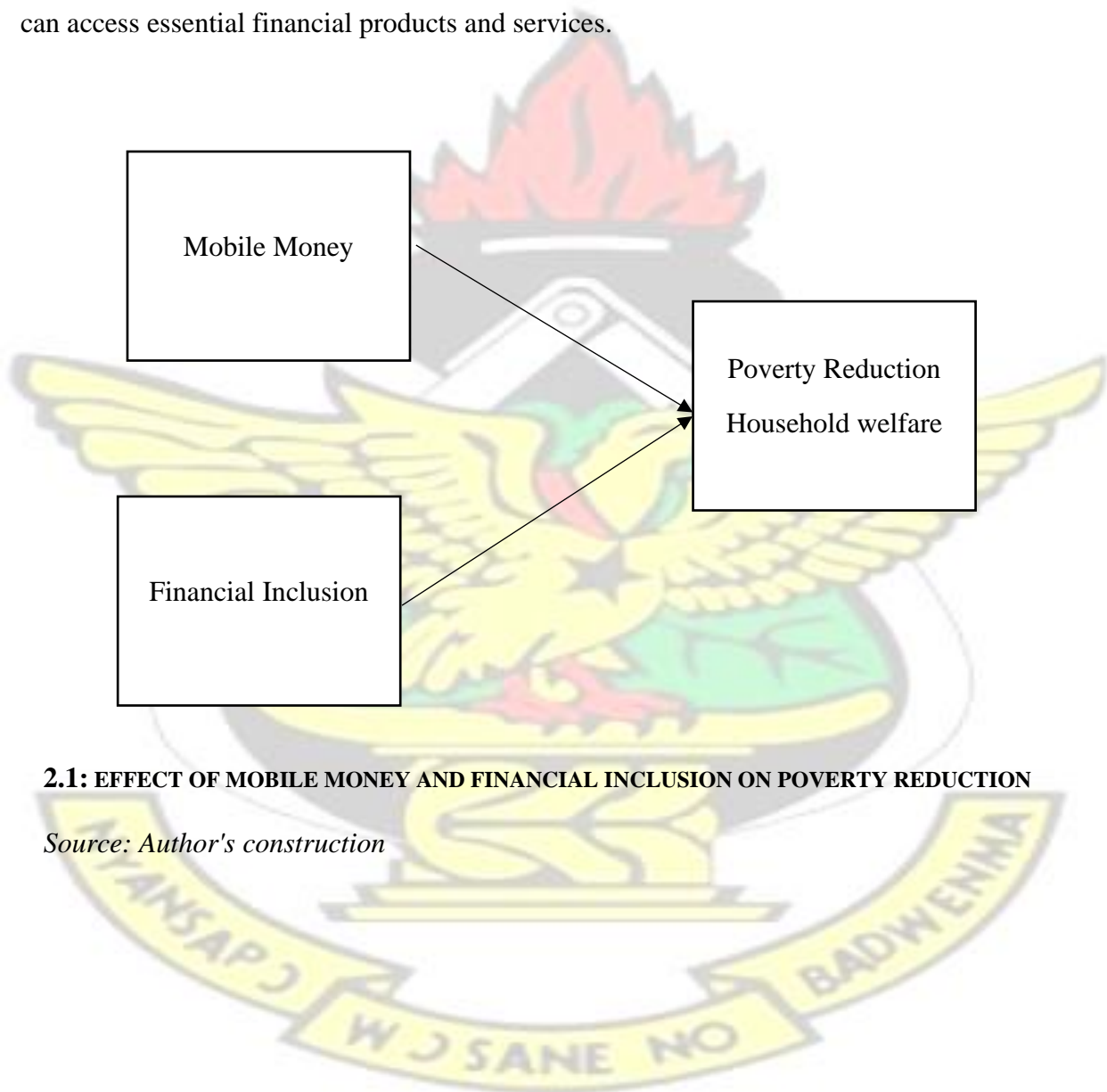
Inoue (2018) investigated the impacts of financial development through commercial banks on poverty conditions in India by using unbalanced panel data for Indian states and union territories from 1973 to 2004 and applying the generalized method of moments estimation. Their results indicate that financial inclusion and deepening have statistically significant negative relationships with the poverty ratio for public sector banks.

## **2.4 Mobile Money and Financial Inclusion in Ghana**

Mobile Money service was operationalized in Ghana in 2009 by the MTN-Ghana. By 2021 mobile money market has reached US\$ 92 Billion in value. Mobile money account by 2021 was 11.5 million (Ghana Payment Report, 2021), double of total bank accounts in Ghana. Several studies show that mobile money use influences financial inclusion (e.g., Mwangasu et al., 2022; Myeni, et al. 2020; Amoah and Korle, 2020; Maëlle Della Peruta, 2018; Tha et al. 2022). This suggests that mobile money could be leveraged to promote financial inclusion in Ghana. Financial inclusion is relevant in Ghana where about 85% of enterprises in Ghana are Micro, Medium and Small Enterprises (MSMEs), and a significant number of people have no former access to the banking system (Domanban et al., 2022). MSMEs contribute about 70% to the Ghanaian Gross Domestic Product (GDP). About 95% of the MSMEs belong to the informal sector (Sompa, 2021). These statistics of the dominance of MSMEs are critical to the economic transformation of Ghana. The financial inclusion transformation agenda is usually linked with mobile money penetration. The government of Ghana, through the National Financial Inclusion and Development Strategy (NFIDS), seeks to improve financial inclusion. The policy document is the government agenda for expanding financial inclusion. The problem identified by the policy document is the lack of innovation in financial products and services (NFIDS, 2018)

## 2.5 Conceptual Framework

Fig 2 depicts the possible effect of mobile money use and financial inclusion on poverty alleviation. Mobile money use ensures that individuals, especially the marginalized poor could have a reliable means of sending and receiving money. These activities could enhance desirable financial practices such as savings and investing towards education, health, and business expansion in the future. Therefore, the use of mobile money ensures that marginalized poor can access essential financial products and services.



**2.1: EFFECT OF MOBILE MONEY AND FINANCIAL INCLUSION ON POVERTY REDUCTION**

*Source: Author's construction*



## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.0 Introduction**

This chapter discusses data and methodology. It presents research design, data and sources, models, estimation techniques and variables.

#### **3.1 Research Design**

A quantitative research approach has been employed. Quantitative research has been employed because the study uses quantified data to test the relationship between dependent and independent variables using statistics and computational techniques theory (Luo et al., 2022). The study adopts a descriptive design. The descriptive approach allows the researcher to adopt a defined structure to accurately give a description or presentation on phenomena such as financial inclusion and mobile money on household welfare and poverty reduction. This study is experimental since it strictly adheres to a scientific research design, and firm hypothesis on direction and relationship between variables (Adkins et al., 2022).

#### **3.2 Data and Data Source**

The study uses annual panel secondary data of Ghana from 2010 to 2022 with 12 year-observation. Mobile money debuted in Ghana in 2009, This study expects that 11 years on, the adoption of mobile money will have positive outcomes on important welfare and poverty indicators. Thus, this study was conducted between 2010 and 2022 to maintain the popular view that money is an important economic and welfare tool, thus. This measures poverty with three indicators (i.e., life expectancy, poverty headcount) sourced from the World Development Indicators (WDI) database and welfare household per capita consumption sourced from WDI. Independent variables are the financial inclusion index is measured with five indicators sourced

from WDI. These are the number of ATMs, bank branches, credit and debit cards, and account ownership, per 100,000 adults. Mobile money is the value of annual mobile money transactions sourced from GPS.

### 3.3 Model Specification

The study estimates the panel regressions model. Econometrically, a panel regression model is shown as:

$$\dot{y}_{it} = \alpha + \beta X_{it} + \beta_{it} + \mu_{it} + \varepsilon_{it} \dots \dots \dots 1$$

*To examine the effect of mobile money penetration on household welfare*

$$Welfare_{i,t} = \beta_o + \beta_{1t}MM + \beta_2MOB_{i,t} + \beta_3UNEM_{i,t} + \beta_4EDU_{i,t} + \beta_5INFS_{i,t} + \beta_6GDP_{i,t} + e_{i,t} \dots \dots \dots 2$$

*To investigate the effect of mobile money on financial inclusion*

$$FI_{i,t} = \beta_o + \beta_{1t}MM + \beta_2MOB_{i,t} + \beta_3UNEM_{i,t} + \beta_4EDU_{i,t} + \beta_5INFS_{i,t} + \beta_6GDP_{i,t} + e_{i,t} \dots \dots \dots 3$$

*To investigate the effect of mobile money penetration and financial inclusion on poverty reduction*

$$Poverty_{i,t} = \beta_o + \beta_{1t}Welfare + \beta_2FI_{i,t} + \beta_3UNEM_{i,t} + \beta_4EDU_{i,t} + \beta_5INFS_{i,t} + \beta_6GDP_{i,t} + e_{i,t} \dots \dots \dots 4$$

Where Poverty is life expectancy and poverty headcount ratio, Welfare is household welfare, FI is financial inclusion, MM is mobile money penetration, MOB is mobile phone subscription, EDU is education, INFS is infrastructure, UNEM is unemployment, and GDP is economic growth.

### **3.4 Measurement of Variables**

The section presents variables measurement and description for both dependent and independent variables as well as control variables.

#### **3.4.1 Poverty Reduction**

##### **3.4.1.1 Life Expectancy**

This study measures poverty as life expectancy at birth, total (years). Life expectancy is defined as the average number of years a person of a specific age can expect to live, assuming that age-related mortality rates remain constant (Yang et al., 2022). According to the Organisation for Economic Co-operation and Development (OECD) Health Data 2007, life expectancy is one of the most important indices of global health and socio-economic development. The advantages of living longer do not just benefit individuals; they also benefit society as a whole. According to Bukhari et al. (2021), people living in poverty have shorter life spans due to their inability to afford quality health care.

##### **3.4.1.2 Poverty Headcount**

The poverty headcount is a percentage of the population who live on less than \$1.90 a day, at 2011 international prices (Gnangnon, 2022). This indicates the extent of poverty incidence. This represents a shortfall in income or consumption from the \$1.90 poverty line, counting the non-poor as having zero shortfall, as a percentage of the poverty line.

#### **3.4.2 Household Welfare**

Following Jun et al., (2020), this study measures household welfare using household per capita consumption expenditure. This measure captures expenditure on all goods and services

excluding expenditure on private housing (Mwale et al., 2022). It includes all payments to governments by households and even payments by private companies for households.

### **3.4.3 Financial Inclusion**

Financial inclusion is the dependent variable. Following Vo et al. (2021) and Ali et al. (2020), the study uses four variables for financial inclusion five variables are used to compose financial inclusion. The variables are bank branches per 100,000 adults, number of ATMs, per 100,000 adults, credit and debit cards per 100,000 adults and deposits per 100,000 adults. These items are used to create financial inclusion measures.

### **3.4.4 Mobile Money**

The study measures mobile money as the annual transaction volume of mobile money transactions in a year (Senyo et al. 2022)

### **3.4.5 Mobile Phone Subscription**

Following Ahmad et al., (2020), mobile phone subscription is measured as the number of people with mobile phones per 100,000 adults sourced from WDI. Mobile phone is noted to increase financial inclusion due to its information and communication features. In addition, the current mobile money services run on mobile phones. Thus, this study expects a positive effect of mobile phone subscriptions on financial inclusion and poverty reductions.

### **3.4.6 Infrastructure**

This study measures infrastructure using the global infrastructure index which measures a country's ranking on infrastructure based on transport and communication technology, energy and finance (Donaubauer et al., 2015) sourced from WDI. This study expects that



infrastructure has an impact on the welfare and poverty conditions of households and individuals (Zhang et al., 2022).

#### **3.4.7 Education**

This study measures education as several people more than 25 years, who at least, have completed lower secondary school. (Bird et al., 2022). Empirical literature establishes the importance of education towards poverty alleviation. (Yuan and Ding, 2023; Koomson et al., 2023). It is believed that educated individuals have high incomes through formal and secure employment.

#### **3.4.8 GDP Growth**

This study measures GDP growth as annual GDP growth, to represent the economic conditions of a country. Higher economic growth is expected to reflect in improving the welfare conditions of households, and thus reduce poverty conditions (Qin and Zhang, 2022). Contrary, poor economic growth chronicles lack of lack of economic opportunities (Song et al., 2022).

**Table 3.1: Variable Measurement and Description**

<b>Variables</b>	<b>Definition</b>	<b>Citation</b>
Poverty 1 (Poverty Head Count)	Percentage of the population who live less than \$1.90 a day, at 2011 international prices	Gnangnon (2022)
Poverty 2 (Life Expectancy)	Life expectancy at birth, total (years)	Yang et al., (2022)
Household Welfare (Welfare)	Expenditure on households' financial consumption	
Financial Inclusion (FI)	An index of 5 items including ATM use, deposits at banks, credit and debit card users, bank branches and mobile money subscribers, per 100,00 adults	Vo et al. (2021) and Ali et al. (2020)
Mobile phone subscriptions (MOB)	Number of people using mobile phones per 100,000 adults	Sanga and Aziakpono (2022)
Education Infrastructure	An index of the country's development in finance, transport, energy and ICT	Bird et al. (2022) Davidai, (2022)
GDP Growth Rate	GDP growth (annual %)	Davidai, (2022)
Mobile Money	The total value of mobile money transactions (GH¢'Million)	Senyo et al. (2022)

**Source:** Author's elaboration

## CHAPTER FOUR

### RESULTS AND DISCUSSION

#### 4.0 Introduction

This section presents the results and discussion. It has five (5) sections. 4.1 presents stationarity results. 4.2 shows summary statistics. 4.3 presents correlation. 4.4 presents the empirical results, and 4.5 discusses the results.

#### 4.1 Stationarity

Table 4.1 shows ADF test results for unit root. The results indicate the absence of unit roots (no-stationarity), except for public debt and education. That is public debt and education are stationarity at the level. The variables achieve stationarity either at levels or at first differences (of order 0 or 1).

**Table 4.1: Augmented Dickey-Fuller Unit Root Test Results**

Variables	Level	Difference	Conclusion
Poverty headcount	-4.22	-5.75**	<i>I</i> (1)
Life expectancy	-4.66	-7.86***	<i>I</i> (1)
Financial inclusion	-2.54	-5.86***	<i>I</i> (1)
Mobile Money	-4.77	4.78**	<i>I</i> (1)
Mobile money subscription	-2.87	-5.87***	<i>I</i> (1)
Infrastructure	-5.11**	-6.86**	<i>I</i> (0)
GDP growth rate	-3.87	-7.86**	<i>I</i> (1)
Public Debt	-1.97	-4.86	<i>I</i> (1)
Education	-4.65**	4.22	<i>I</i> (0)

**Note(s):** t-statistics of the ADF are reported, \*\* and \*\*\* are 5% and 1% significance levels, respectively.

**Source:** Author's estimation.

## 4.2 Summary Statistics

Table 4.2 shows summary statistics of the study's variables. The poverty headcount averages 0.021 with a standard deviation of 0.172, suggesting that the country has many people living in poverty or below the \$1.90 poverty line. The average financial inclusion (FI) is 0.231 and the standard deviation of 0.172, suggesting that financial inclusion in Ghana is relatively lower. The GDP growth rate has a mean of 46.3% and a standard deviation of 29.3%. This indicates relatively high growth since the regional average is 3.88% (World Bank, 2018b). Mobile money has a mean of an average transaction of 17.447 and a standard deviation of 0.518. This indicates that in a month mobile money transaction is about 17 million which indicates high mobile money penetration. Mobile Money subscription has a mean of 128.567 and a standard deviation of 8.711, suggesting high mobile phone penetration in Ghana, and presenting a greater opportunity for mobile money penetration.

**Table 4.2: Descriptive Analysis**

Variables	Mean	St. Deviation	Min	Max
PH	0.021	0.172	0.018	0.794
LE	0.44	0.321	432.321	543.214
HW	0.231	0.431	0.674	3.000
FI	0.217	0.172	0.018	0.794
MOMO	17.447	0.518	8.322	10.150
MM	10.713	0.725	9.293	11.459
INFST	0.341	0.054	0.651	342.213
GDPGR (%)	0.463	0.293	0.121	0.671
EDU	106.499	27.421	12.612	147.218

**Note:** PH= poverty headcount; LE= Life expectancy; HW= Household welfare; MOMO; mobile money; MM = mobile phone subscription; INFST= Infrastructure; GDPGR= GDP growth rate; EDU is education. **Source:** Author's estimation.



### 4.3 Correlation

Table 4.3 checks the potential multicollinearity problem among the independent variables using the correlation matrix and calculates the Variance Inflation Factor (VIF). All the correlation coefficients are less than 0.8. The highest value of VIF is 3.75, and less than 10 thresholds of a multicollinearity problem. Hence, the variables suffer from no multicollinearity problem



**Table 4.3: Correlation**

Var.	PH	LE	HW	FI	MOMO	MM	INFST	GDPGR	EDU	VIF
<b>PH</b>	1									1.75
<b>LE</b>	0.485*	1								1.34
<b>HW</b>	0.143*	<b>0.043</b>	1							3.74
<b>FI</b>	-0.54*	-0.342	-0.563*	1						3.75
<b>MOMO</b>	-0.173	-0.208	-0.362*	0.3654*	1					3.04
<b>MM</b>	-0.018	0.198	0.092	-0.113	-0.44	1				1.06
<b>INFST</b>	-0.071	-0.66*	-0.654*	0.395	0.502	-0.297	1			1.64
<b>GDPGR</b>	0.276	0.282	0.643**	-0.421	-0.429	0.277	-0.453*	1		1.32
<b>EDU</b>	0.054	0.032	0.231*	0.076	0.006	0.076	-0.053	0.042	1	2.64

**Note:** PH= poverty headcount; LE= Life expectancy; HW= Household welfare; MOMO; mobile money; MM = mobile phone subscription; INFST= Infrastructure; GDPGR= GDP growth rate; EDU is education.

**Source:** Author's estimation.

## 4.4 Empirical Results

### 4.4.1 Mobile Money and Financial Inclusion

Table 4.4 shows the results of the effect of mobile money on financial inclusion using OLS and 2SLS methods in equations 1 and 2, respectively. However, the 2SLS results are reported since it is more robust than the OLS results. The adjusted R-squared in model 2 is 0.913, suggesting that about 91.3% of the variations in financial inclusion are explained by the regressors. The main explanatory variable is mobile money and it shows a positive and significant ( $\beta = 0.432$ ,  $p\text{-value} > 0.01$ ) effect on financial inclusion, suggesting that mobile money improves financial inclusion in a country. The coefficient is 0.432 suggesting that a percentage increase in mobile money service increases financial inclusion by 43.2%.

**Table 4.4: Effect of Mobile Money on Financial Inclusion**

Var	OLS	Std. Error	2SLS	Std. Error
	(1) Coeff.		(2) Coeff.	
FI (-1)	0.00008*	(0.00003)		
Mobile Money	0.214***	0.090	0.432***	0.124
Mobile phone Subscription	0.775	0.880	1.201**	0.055
Infrastructure	0.123***	0.463	0.613	0.634
GDP growth rate	0.014	0.012	1.079**	0.057
Education	0.245***	0.054		
Constant	148.964***	8.808	262.137**	13.422
<i>Adjusted R<sup>2</sup></i>	0.876		0.913	
F-statistics	3252.765		3628.12	
Prob.	0.000		0.000	

**Note:** \* represent (0.01 sig.); \*\* represent (0.05 sig.); and \*\*\*represent (0.001 sig.)

**Source:** Author's estimation

#### 4.4.2 Mobile Money, Financial Inclusion and Poverty Reduction

Table 4.4 reports results on the impact of mobile money and financial inclusion on poverty and welfare. Poverty has been represented by poverty headcount (the number of people who live less than 1.9\$ a day) (Gnangnon,2022) and life expectancy (the average years a person of a specific age has to live). Studies note that people living in poverty have short life spans due to poor nutrition and health-related challenges (Batana, et al., 2020; Yang et al., 2022). These are popularly used as measures of poverty in literature. In addition, household final consumption expenditure has been used to represent household welfare which in a strict sense measures poverty reduction (Mwale et al., 2022). The results are presented in models 3 to 8. Model 3 and 4 shows OLS and 2SLS results where poverty headcount is the dependent variable. Models 5 and 7 have life expectancy as the dependent variable for both the OLS and 2SLS methods, while models 6 and 8 have household final consumption expenditure as the dependent variable. Model 1 shows that mobile money has a negative and significant ( $\beta = 0.056$ ,  $p\text{-value} > 0.01$ ) effect on poverty headcount. Similarly, model 6 shows that mobile money has a negative and significant ( $\beta = -0.123$ ,  $p\text{-value} > 0.01$ ) effect on life expectancy and, a positive and significant effect on household final consumption expenditure ( $\beta = 0.342$ ,  $p\text{-value} > 0.05$ ) in model 7. The results suggest that mobile money services reduce poverty and increase household welfare.

Furthermore, financial inclusion has a negative and significant ( $\beta = -0.287$ ,  $p\text{-value} > 0.01$ ) association with poverty headcount in model 3, and life expectancy ( $\beta = -0.345$ ,  $p\text{-value} > 0.01$ ) in model 5. However, financial inclusion has a positive and significant effect on household final consumption expenditure ( $\beta = -0.564$ ,  $p\text{-value} > 0.01$ ) in model 7. The results suggest that financial inclusion decreases poverty but increases household welfare.



Concerning the control variables, mobile phone subscription has a negative and significant ( $\beta = -0.123$ ,  $p\text{-value} > 0.01$ ) association with life expectancy in model 5, but a positive effect on household welfare in model 7. High mobile phone subscription improves financial inclusion which has been reported to have a negative association with poverty (e.g., Karlan, and Zinman, 2022; Dogan et al., 2022)

Furthermore, an increase in economic growth rate increases household welfare by 24.6 % in Model 8. During economic growth, the country can finance social and economic projects that create employment increase personal income, and thus reduce poverty. The results are consistent with other studies (e.g., Chikalipah, 2016), Kim et al., 2018; Ozturk & Ullah, 2022; Liu et al., 2022). Education has a negative and significant ( $\beta = -0.002$ ,  $p\text{-value} > 0.01$ ) effect on poverty in model 4. The results confirm prior studies which demonstrate that education is important to poverty reduction (e.g., Yuan and Ding, 2023; Koomson et al., 2023). Educated individuals have high incomes through formal and secure employment.

**Table 4.5: Effect of Mobile Money and Financial Inclusion on Poverty Reduction**

Var.	Poverty Headcount		Life Expectancy		Household final consumption expenditure	
	OLS	2SLS	OLS	2SLS	OLS	2SLS
	(3)	(4)	(5)	(6)	(7)	(8)
	Coeff. (SE)	Coeff. (SE)	Coeff. (SE)	Coeff. (SE)	Coeff. (SE)	Coeff. (SE)
<b>PH (-1)</b>	0.532*** (0.124)	0.321** (0.042)				
<b>LE (-1)</b>			0.172** (0.104)	0.546*** (0.124)		
<b>HFCE (-1)</b>					0.043*** (0.012)	0.023 (0.021)
<b>MOMO</b>	-0.056*** (0.012)	0.124 (0.214)	0.003 (0.002)	-0.123*** (0.463)	0.342*** (0.124)	0.022** (0.010)
<b>FI</b>	-0.287*** (0.120)	-0.034*** (0.009)	-0.345*** (0.118)	0.056*** (0.012)	0.564*** (0.120)	-0.005 (0.013)
<b>MM</b>	324.603** (35.599)	245.125 (125.674)	-0.123*** (0.046)	0.116 (0.300)	0.145*** (0.021)	0.009** (0.003)
<b>INFTS</b>	0.426 (0.142)	-0.001** (0.006)	0.00001 (0.00001)	0.065 (0.124)	0.241 (0.410)	0.00004 (0.00001)
<b>GDPGR</b>	-3.687** (0.179)	-0.0005 (0.0005)	-0.002** (0.001)	0.754*** (0.174)	0.065 (0.124)	0.246** (0.194)
<b>EDU</b>	-1.001* (0.152)	-0.002** (0.0006)	-0.064** (0.014)	-0.001 (0.003)	0.116 (0.300)	0.022 (0.035)
<b>Constant</b>	0.415*** (0.124)	0.016** (0.007)	0.054*** (0.011)	0.185*** (0.031)	0.172** (0.104)	0.00005 (0.00001)
<b>Adjusted R<sup>2</sup></b>	0.975	0.654	0.543	0.432	0.886	0.342
<b>F-statistics</b>	563.654	234.765	222.765	189.976	190.076	105.986
<b>Prob.</b>	0.000	0.000	0.000	0.000	0.000	0.000

**Note(s):** Standard Errors are in parenthesis. \*, \*\* and \*\*\* represent 1%, 5% and 10% sig. levels, respectively. PH= poverty headcount; LE= Life expectancy; HFCE= Household welfare; MOMO; mobile money; MM = mobile phone subscription; INFST= Infrastructure; GDPGR= GDP growth rate; EDU is education.

## **4.5 Discussion of Results**

### **4.5.1 Effect of Mobile Money on Financial Inclusion**

The evidence shows that mobile money improves financial inclusion and in line with several other studies (e.g., Aboagye and Anong, 2020; Ahmed et al.2020; Grootenhuis; 2019; Amoah & Korle, 2020; Myeni et al., 2020; Okello et al., 2020; Olayini, 2018; Serbeh et al., 2020; Teutio et al., 2021; Mpofu, 2022; Kim, 2022; Hamdan et al., 2022; Kyungha et al., 2022; Munyegera and Matsumoto, 2016; Riley, 2018; Danquah and Iddrisu, 2018). Mobile money services allow individuals to access loans, get microinsurance, save and build wealth and facilitate remittances across a country and beyond (Lee et al., 2021; Wieser et al., 2019).

Mobile money has become a commonly used platform by many individuals and businesses including farmers and traders in performing basic financial transactions which previously were done at formal financial institutions. Thus, financial transactions have been made easy and accessible. Moreover, people in rural communities have been the main target of mobile money expansion. The intention is to capture them in the formal banking systems. Numerous evidence on the benefits of mobile money in enhancing financial access (Mwangasu et al., 2022; Myeni, et al. 2020; Amoah and Korle, 2020; Maëlle Della Peruta, 2018; Tha et al. 2022) confirm the role of mobile money is playing in financial inclusion agenda. The results further support the technology acceptance model and conclude that the high adoption of mobile money which has improved financial inclusion is due to its perceived usefulness

#### **4.5.2 Effect of Mobile Money and Financial Inclusion on Poverty and Household Welfare**

The results show that mobile money reduces poverty but increases household welfare. **The** results support several empirical studies (see, e.g., Dogan, et al., 2022; Tay et al., 2022; Nsiah et al., 2022; Immurana et al. 2022). For instance, N'dri investigate the effect of mobile money and financial inclusion on individuals' welfare in Burkina Faso and find that mobile money and financial inclusion facilitate access to essential financial products for the unbanked population thereby improving financial inclusion and consequently alleviating poverty. Kakinaka (2020). Furthermore, Nanziri (2016) demonstrate that financially included women have more welfare gains than financially excluded women in South Africa.

Promoting financial inclusion and providing access to useful financial products and services to low-income households is a policy objective for every government, especially for African countries (Domanban, et al., 2022; Dong et al., 2022). Access to quality financial products is mentioned in the Sustainable Development Goals of the United Nations in 2030 (Elijah and Ogunlade, 2020; García-Herrer and Turégan, 2022). The statements of financial inclusion as a public policy, and social and economic tools have its root in the financial-economic growth nexus (Grohmann et al., 2018) and poverty reduction (Grohmann et al., 2021).

Mobile money and financial inclusion have several benefits to households' welfare, financial systems and economic growth. The promotion of mobile money penetration and financial inclusion facilitates the efficient allocation of financial resources (Kaboski and Townsend, 2020). By providing easy access to financial systems, it enables households to manage their finances. In addition, it alleviates the informal financial and monetary transactions that create exploitation in



the financial systems (Koomson et al., 2020). Accordingly, mobile money and financial inclusion are expected to improve welfare by providing access to useful financial products and services to aid low-income people in pro-poor growth (Banerjee, Duflo, Glennerster, and Kinnan, 2015 and Mongolia; Attanasio et al. 2020).



## **CHAPTER FIVE**

### **SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter presents a summary of the findings, conclusion, and recommendations of the study. The chapter has five (5) main sections. Section 5.2 summarises the findings. Section 5.3 provides conclusion. Section 5.4 makes recommendations, and section 5.5 provides recommendations for further studies.

#### **5.2 Summary of Finding**

This study investigates the effect of mobile money and financial inclusion on household welfare and poverty reduction in Ghana. Specific objectives are as follows;

##### **5.2.1 Effect of Mobile Money on Financial Inclusion**

This study finds that mobile money has a positive and significant effect on financial inclusion. Mobile money has enhanced financial access through savings, loans, microinsurance, withdrawals and receiving remittances. Thus, people who previously could not access financial services and products can not enjoy formal banking services on the phones through mobile money.

##### **5.2.2 Effect of Mobile Money, Financial Inclusion on Household Welfare and Poverty**

The results show that mobile money has a significant negative effect on poverty, but a positive and significant effect on household welfare. In addition, financial inclusion has negative and significant associations with poverty but has a positive and significant association with household

welfare. Suggesting that mobile money and financial inclusion reduce poverty but increase household welfare.

### **5.3 Conclusion**

Despite research progress on the effect of financial inclusion and mobile money penetration on other socioeconomic variables, the impact of mobile money and financial inclusion on poverty reductions and household welfare is still underdeveloped in the literature. Accordingly, this study investigates the impact of mobile money and financial inclusion on two poverty indicators, i.e., life expectancy and poverty headcount, and household welfare (household final consumption expenditure) defined by the World Bank from World Development Indicators (WDI) from 2010 to 2022. The study applies the OLS and the 2SLS methods. The empirical results reveal that mobile finance increases financial inclusion. Furthermore, mobile money and financial inclusion reduce poverty but increase household welfare. The study therefore concludes that mobile money is an effective policy tool to improve financial inclusion, which leads to poverty reductions and increase household welfare.

### **5.4 Recommendations**

The study finds that mobile money promotes financial inclusion. Based on these results, the study recommends that banks and regulators eliminate barriers to mobile money expansion by reducing transaction costs such as service charges and taxes and ensuring safety by combating cyber risk associated with the use of mobile money.

The study further shows that mobile money and financial inclusion reduce poverty and improve household welfare. In light of these findings, the study recommends that policymakers must promote household access to financial institutions and infrastructure. For instance, given the benefits of mobile money services to financial inclusion, governments must encourage and empower mobile money operators including mobile telecommunication companies, banks, agents and fintech institutions to expand services to households. Such expansion of mobile money services will increase financial inclusion, reduce poverty and promote household welfare.

### **5.5 Recommendations for Future Research**

The effect of mobile money on financial inclusion and poverty can accelerate within a conducive institutional environment. However, this focuses on the direct effect of mobile money and financial inclusion on poverty reductions. Therefore, future studies can investigate whether the quality institutional environment influences the relationship between mobile money and financial inclusion on poverty reduction and household welfare.



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